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(54) **Method for elimination of mobile fraction of heavy metal ions in sewage sludge**

(57) The method for elimination of mobile fraction of heavy metal ions in sewage sludge is characterised in that the sewage sludge after the methane fermentation is mixed with natural milled zeolite in weight ratio of ze-

olite of 2-5% of contents of dry mass of fermented sewage sludge and the so obtained mixture is dried until the water content in the mixture is no higher than 20% by weight.

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## Description

**[0001]** The present invention relates to a method for elimination of mobile fraction of heavy metal ions in sewage sludge.

**[0002]** Sewage sludge, depending on preparation and local conditions can be regarded either as waste or as a product that can be utilised in agriculture. Since it contains nitrogen and phosphorus compounds as well as humus producing matter, sewage sludge is valuable as a fertiliser and can be utilised for fertilization or recultivation of green lands.

**[0003]** Such sewage sludge should meet certain requirements: the contents of mobile heavy metal ions for use in natural environment should be as follows:

Metal	Metal contents in mg per kg of dry mass
Pb	<1000
Cd	<25
Cr	<1000
Cu	<1200
Ni	<200
Hg	<10
Zn	<2500

**[0004]** In terms of bacteriology, the sewage sludge should not contain bacteria of *Salmonella* genus and the contents of eggs of digestive tract parasites should be lower than 300 pcs/kg dry mass.

**[0005]** Presently more and more frequently methane fermentation is employed and 1 kg of dry sludge yields production of 0,33 m<sup>3</sup> of methane, contained in biogas in quantity of 60-70%. During fermentation also bacteria and parasites are eliminated. Fermentation does not eliminate however the contents of heavy metals, which could be present in sewage treatment plants, also those processing industrial waste. Sludge containing heavy metals is not suitable for use in nature because of the risk of polluting subterranean water with heavy metal ions.

**[0006]** The essence of the method for elimination of mobile fraction of heavy metal ions in sewage sludge is that the sewage sludge after the methane fermentation is mixed with natural milled zeolite in weight ratio of zeolite of 2-5% of the contents of dry mass of fermented sewage sludge and the so obtained mixture is dried until water content in the mixture is no higher than 20 % by weight.

**[0007]** Beneficial result of the method according to this invention is that it allows for elimination of pollution of subterranean water with heavy metal ions.

**[0008]** The method for elimination of mobile fraction of heavy metal ions in sewage sludge according to this invention involves mixing the sewage sludge after the

methane fermentation with natural milled zeolite in weight ratio of zeolite of 2-5% of the contents of dry mass of fermented sewage sludge. Afterwards the so obtained mixture is dried until water content in the mixture is no higher than 20 % by weight.

## Claims

1. The method for elimination of mobile fraction of heavy metal ions in sewage sludge **characterised in that** the sewage sludge after the methane fermentation is mixed with natural milled zeolite in weight ratio of zeolite of 2-5% of contents of dry mass of fermented sewage sludge and the so obtained mixture is dried until the water content in the mixture is no higher than 20 % by weight.



## EUROPEAN SEARCH REPORT

Application Number  
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 6 February 2009	Examiner Rozanska, Agnieszka
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CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document	

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
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